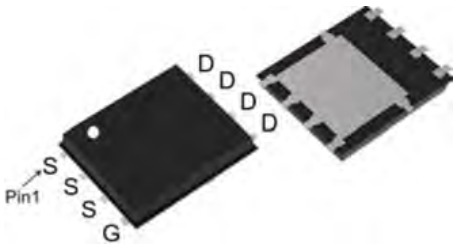
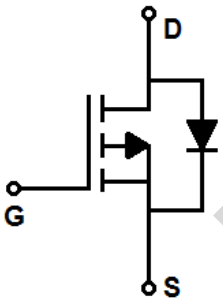
Trench P-channel Power MOSFET

MSR015P03D33

PDFN3*3





V_{DS}	-30	V
$R_{DS(on),TYP}$@ V_{GS}=10 V	11	mΩ
I_D	-10	A

Features

1、Low on – resistance

2、Package PDFN3*3

3、Trench P-channel Power MOSFET

4、Halogen free

Applications

1、Load Switch for Portable Devices

2、DC/DC Converter

Maximum ratings, at T_A =25°C, unless otherwise specified

Symbol	Parameter		Rating	Unit
$V_{(BR)DSS}$	Drain-Source breakdown voltage		-30	V
V_{GS}	Gate-Source voltage		±20	V
I_D	Continuous drain current @VGS=10V	T_C =25°C	-10	A
		T_C =70°C	-8	A
I_{DM}	Pulse drain current tested	T_C =25°C	-24	A
E_{AS}	Avalanche energy, single pulsed		25	mJ
P_D	Maximum power dissipation	T_C =25°C	3.3	W
T_{STG},T_J	Storage and Junction Temperature Range		-55 to 150	°C

Thermal Characteristics

Symbol	Parameter	Typical	Unit
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case	5.0	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	60	°C/W

Electrical Characteristics

Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
Static Electrical Characteristics @ T_j=25°C (unless otherwise stated)						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	-30	--	--	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=-24V,V_{GS}=0V	--	--	-1	μA
I_{GSS}	Gate-Body Leakage Current	V_{GS}=±20V,V_{DS}=0V	--	--	±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=-250μA	-1.2	--	-2.5	V
$R_{DS(on)}$	Drain-Source On-State Resistance	V_{GS}=-10V, I_D=-10A	--	11	15	mΩ
		V_{GS}=-4.5V, I_D=-8A	--	17	25	mΩ
Dynamic Electrical Characteristics @ T_j = 25°C (unless otherwise stated)						
C_{iss}	Input Capacitance	V_{DS}=-15V,V_{GS}=0V , f=1MHz	--	1200	--	pF
C_{oss}	Output Capacitance		--	155	--	pF
C_{rss}	Reverse Transfer Capacitance		--	139	--	pF
Q_g	Total Gate Charge	V_{DS}=-15V,I_D=-1A , V_{GS}=-10V	--	10	--	nC
Q_{gs}	Gate-Source Charge		--	2	--	nC
Q_{gd}	Gate-Drain Charge		--	2.7	--	nC

Switching Characteristics

Td(on)	Turn-on Delay Time	V_{DS}=-15V, V_{GS}=-10V, R_G=6.0Ω, I_D=-1A	--	13	--	ns
Tr	Turn-on Rise Time		--	15	--	ns
Td(off)	Turn-Off Delay Time		--	198	--	ns
Tf	Turn-Off Fall Time		--	98	--	ns

Source- Drain Diode Characteristics@ T_j = 25°C (unless otherwise stated)

I_{SD}	Source drain current(Body Diode)	T_A=25℃	–	–	-10	A
V_{SD}	Forward on voltage	I_{SD}=-10A,V_{GS}=0V	--	–	-1.2	V

Typical Characteristics

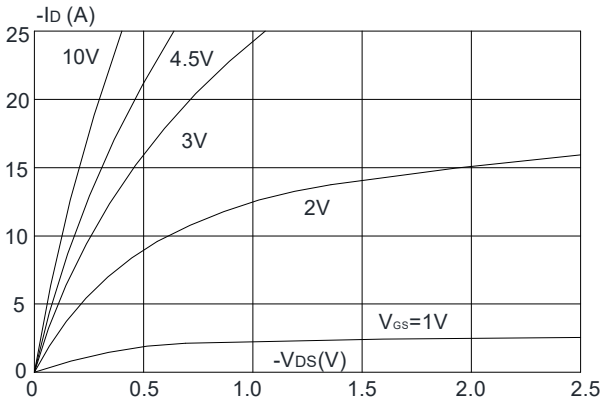


Figure 1: Output Characteristics

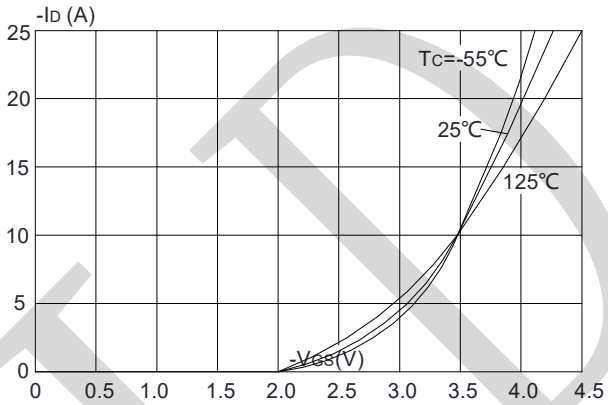


Figure 2: Typical Transfer Characteristics

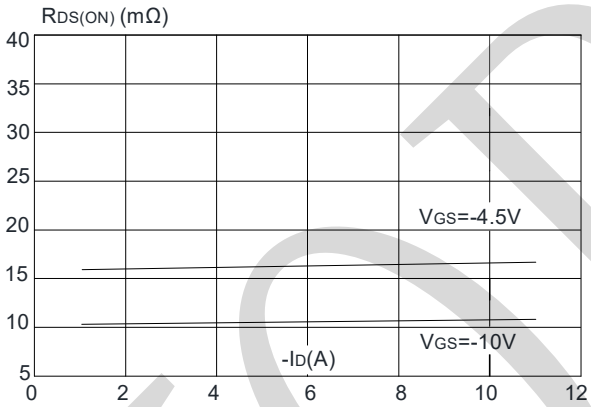


Figure 3: On-resistance vs. Drain Current

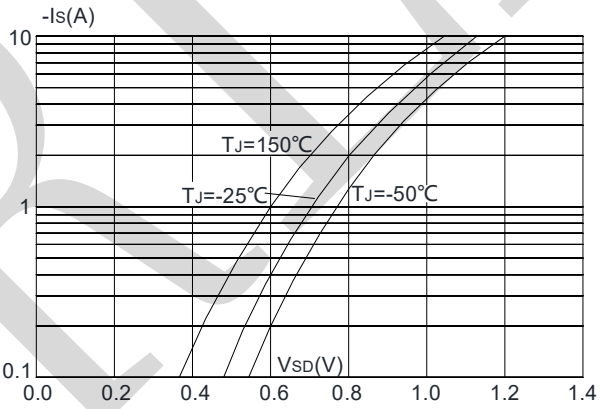


Figure 4:Body Diode Characteristics

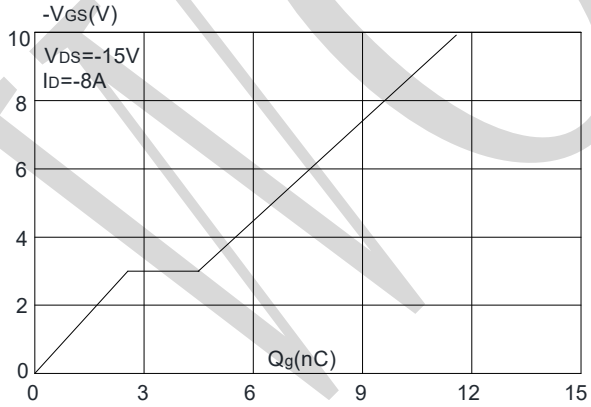


Figure 5: Gate Charge Characteristics

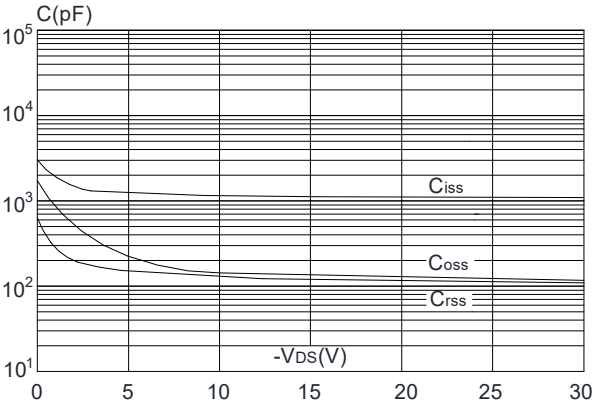


Figure 6: Capacitance Characteristics

Typical Characteristics

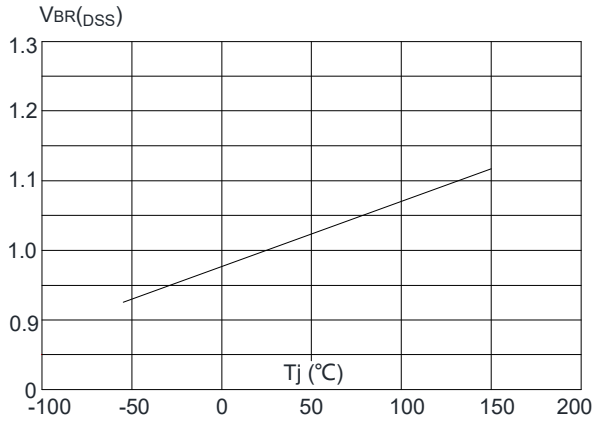


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

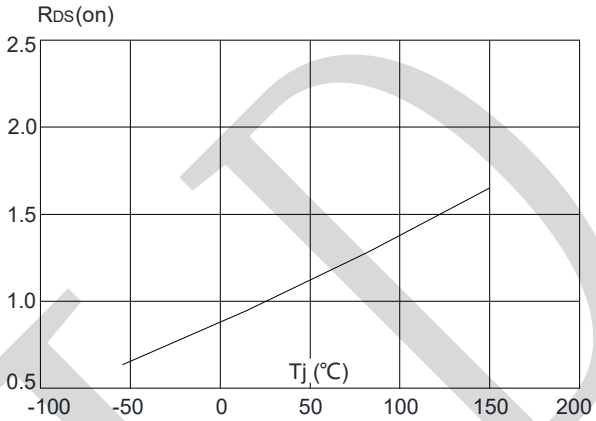


Figure 8: Normalized on Resistance vs. Junction Temperature

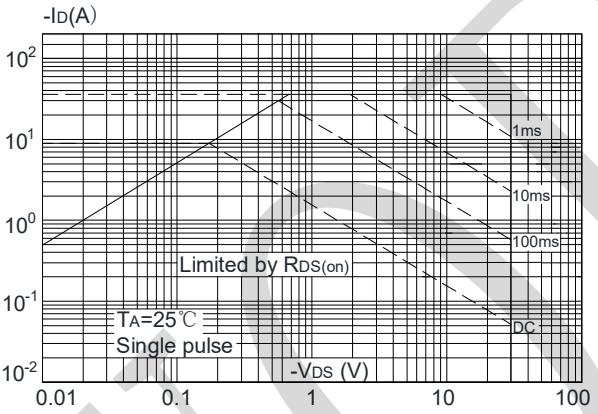


Figure 9: Maximum Safe Operating Area

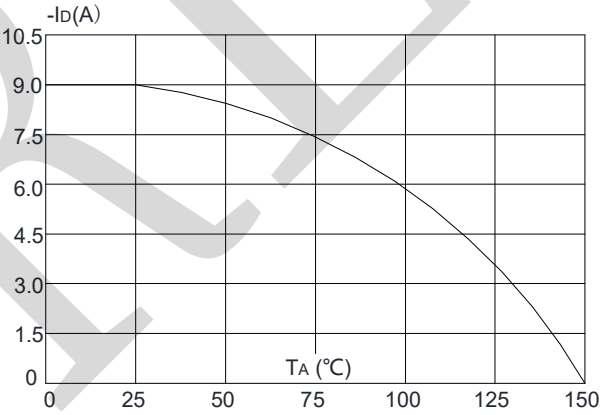


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

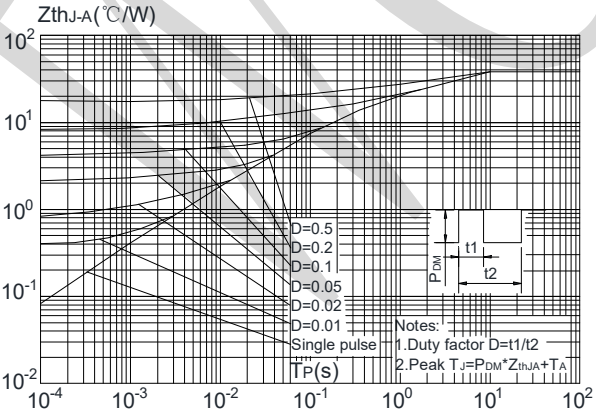
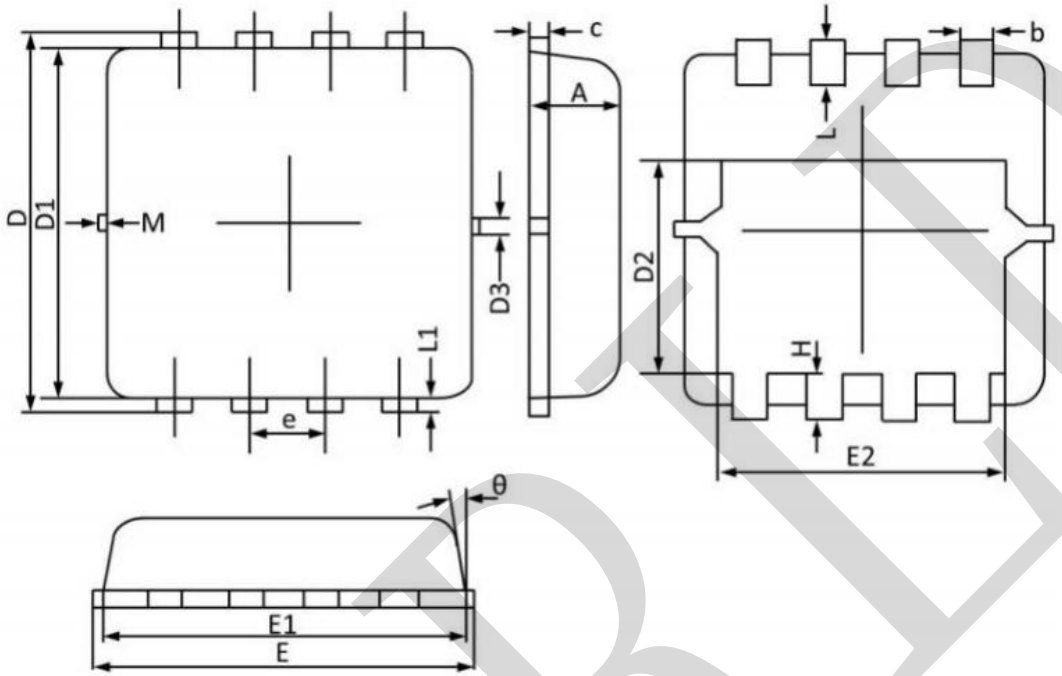


Figure 11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

PACKAGE OUTLINE DIMENSIONS



unit : mm

Symbol	Min	Typ	Max	Symbol	Min	Typ	Max
A	0.70	0.75	0.80	**b**	0.25	0.30	0.35
C	0.10	0.15	0.25	**D**	3.25	3.35	3.45
D1	3.00	3.10	3.20	**D2**	1.78	1.88	1.98
D3	--	0.13	--	**E**	3.20	3.30	3.40
E1	3.00	3.15	3.20	**E2**	2.39	2.49	2.59
e		0.65BSC		**H**	0.30	0.39	0.50
L	0.30	0.40	0.50	**L1**	--	0.13	--
θ	--	10°	12°	**M**	*	*	0.15